1992 WL 562556 (Ind.Dept.Env.Mgmt.)

Indiana Department of Environmental Management

State of Indiana

IN THE MATTER OF: OBJECTIONS TO RECOMMENDED FINDINGS OF FACT, CONCLUSIONS OF LAW AND ORDER OF THE ADMINISTRATIVE LAW JUDGE REGARDING: PEABODY COAL COMPANY

Cause No. 91-A-E-287
January 27, 1992

County of Marion

NOTICE OF FINAL ORDER

***1** On December 4, 1991, the Air Pollution Control Board (Board) heard the objections filed to the attached Recommended Findings of Fact, Conclusions of Law and Recommended Order. The Board adopted as its Final Order the Recommended Findings of Fact, Conclusions of Law and Recommended Order which are incorporated herein by reference.

Kathy Prosser
Technical Secretary

RECOMMENDED FINDINGS OF FACT, CONCLUSIONS OF LAW AND ORDER OF THE ADMINISTRATIVE LAW JUDGE

FINDINGS OF FACT

1. On November 13, 1989, the Indiana Department of Environmental Management ("IDEM") issued its Notice and Order of the Commissioner ("Order") to Peabody Coal Company ("Peabody") for alleged violations of the fugitive dust law at its Universal Mine.

2. On December 5, 1989, Peabody filed their Petition for Administrative Review of Order of the Commissioner and Request for Hearing with the Indiana Air Pollution Control Board ("Board").

3. On January 3, 1990, IDEM issued notice to Peabody that their request for review was not timely filed and therefore denied.

4. On January 18, 1990, Peabody timely filed a Request for Reconsideration and an Administrative Law Judge was assigned to conduct a preliminary hearing on the reconsideration issue under Cause No. 90–A–E–287.

5. On March 23, 1990, the Administrative Law Judge issued her Recommended Findings of Fact, Conclusions of Law and Order which found Peabody's Petition to have indeed been untimely filed, and hence the Commissioner's decision denying review appropriate.

6. On April 11, 1990, Peabody filed their Objections to Recommended Findings of Fact, Conclusions of Law and Order of the Administrative Law Judge and Request for Relief with the Board.

7. On June 6, 1990, the Board conducted a hearing on the objections raised by Peabody, after which they dissolved the Recommended Findings of Fact, Conclusions of Law and Order and remanded the cause to the Administrative Law Judge with instructions to hear the case on its merits.

8. Prior to the hearing in Cause No. 90–A–E–287, the Commissioner issued a second Notice and Order against Peabody on October 16, 1990, for additional alleged violations of the fugitive dust law.

9. Peabody timely filed its Petition for Administrative Review of the second order, which was assigned Cause No. 90–A–E–425 and then, upon motion by Peabody, consolidated with the first cause.

10. Indiana's fugitive dust emissions rule is found at 326 IAC 6–4 et. seq.

11. 326 IAC 6–4–1 defines fugitive dust as:
... the generation of particulate matter to the extent that some portion of the material escapes beyond the property line or boundaries of the property ... on which the source is located.

*2 12. To the extent that an "exceedance" of the fugitive dust rule is created by two or more legally separate entities, 326 IAC 6–4–3 states:
... each shall be held proportionately responsible on the basis of contributions by each person as determined by microscopic analysis. In such cases, samples shall be taken downwind from the combination of sources and at the fence line of each source.

13. 326 IAC 6–4–6 lists as exceptions to the fugitive dust rule:
(2) Fugitive dust from publicly maintained unpaved thoroughfares.
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(4) Fugitive dust generated from agricultural operations providing every reasonable precaution is taken to minimize emissions and providing operations are terminated if a severe health hazard is generated because of prevailing meteorological conditions.

14. The Commissioner's Findings of Violation are based on 326 IAC 6–4–2(3) which states that a violation occurs when "the ground level ambient air concentration exceed fifty (50) micrograms per cubic meter above background concentrations for a sixty (60) minute period."

15. The combined orders allege a total of fifty-four (54) separate days between July 9, 1988 and August 28, 1990, when the ambient air concentration exceeded 50 micrograms per cubic meter above background concentrations for a 24–hour period.

16. IDEM uses high-volume (hi-vol) air samplers ("monitors") for sampling ambient air concentrations as required by 326 IAC 6–4–5.

17. IDEM decided to monitor the ambient air concentrations around the Universal Mine in order to determine the impact of Peabody mining operations on local air quality.

18. This case is the first time that IDEM has sited continuous 24-hour monitoring to determine if there has been a fugitive dust violation; in the past they have simply taken air samplers to a source suspected of creating fugitive dust, determined the wind direction at that point and monitored directly downwind and upwind at the source's property boundary for at least a one-hour period, discontinuing the monitoring if another source appeared to be contributing to the dust.

19. Peabody has two active strip mine pits at its Universal mine, but only the activities taking place at the Blanford pit ("pit") are involved in this action.

20. The mining activities suspected of creating fugitive dust at the pit were blasting, moving large amounts of earthen materials, moving coal from the lower portion of the pit line and haul road activity, most of which took place at or near the pit line.

21. The seam of coal mined at the Blanford pit lies approximately 155 feet below the surface; to reach it Peabody has to first remove the topsoil, subsoil then bedrock (overburden), which consists of essentially hard materials that must first be drilled and shot (blasted).

22. The earth removed from the west (highwall) side of the pit to get to the coal is deposited on the east (spoil) side of the pit where the coal has already been extracted, thus the pit has slowly been moving westward and now lies within the state of Illinois.

*3 23. Less than 5% of the removed overburden (spoil) is actually dumped higher than the reclaimed land to the east, so that most of the removal and replacement of spoil occurs in the pit at or below surface level.

24. Larger particles, such as those generated by the breaking up and moving of earth, tend to fall out and settle within 500 to 1000 feet due to gravity.

25. The spoil is reclaimed with rough-grade tractors, leveled down to approximate the original contours of the land and then the subsoil and topsoil replaced, all according to the mines reclamation plan.

26. To prevent soil erosion, the mine must revegetate the land (or mulch it in winter), so farming is a year-round activity.

27. Peabody has a farm crew that works for the mine taking care of post-mine reclamation farming activities; farming outside of the active mine area is done through outside leases with local farmers once vegetation is established, including the field that lies directly south of the Brklach Hall monitors.

28. The haul roads on the mine's property are not paved; however, they are frequently sprayed with water and/or tree sap to suppress the dust.

29. For purposes of monitoring fugitive dust, IDEM sites a monitor upwind of the source to judge the air quality prior to entering the source property and then they site a monitor downwind to determine the air quality immediately exiting the source property.

30. The prevailing wind blows across the Universal Mine property from a general southwesterly direction.

31. The upwind monitor, the suspected source of fugitive dust and the downwind monitor must be lined up to determine what comes in as background and that what goes out is background plus contribution.

32. If the wind blows from the southwest, IDEM generally locates the upwind monitor as close as possible to the southwest cardinal direction from the source and for the downwind site they locate the monitor in a northeast direction from the source.

33. To monitor the air quality around the mine, IDEM sited two upwind monitors near Shirkieville, Indiana (Shirkieville monitors) and two downwind monitors on Brklach Hall in Blanford, Indiana (Brklach Hall monitors).

34. The Shirkieville monitors are located to the south-southeast of the pit and the Brklach Hall monitors are located to the east-northeast of the pit.

35. The Shirkieville upwind monitors are not located as close as possible to the southwest cardinal direction from the pit in that they stand approximately 2 1/2 miles to the south-southeast of the southern edge of the pit and approximately 4 miles south-southeast of the northern tip of the pit.

36. IDEM sited the upwind monitors at Shirkieville under the theory that even though they would not be to the southwest of the pit, they were situated such that the air flowing through the Shirkieville monitors would be of comparable quality to that moving over the pit in that the homogeneous area to the southwest of Shirkieville was representative of the homogeneous area southwest of the pit.

*4 37. IDEM never took any measurements to test the validity of their theory that the quality of the air flowing through the Shirkieville monitors was representative of air quality southwest of the mine.

38. Regardless of how similar one area may be to another area, on any given day you would have to know that the activities taking place in each area were identical or nearly the same in order to assume their respective air qualities were the same.

39. IDEM thought siting the upwind monitors at Shirkieville was a good idea also because it would pick up the effects of activities in the town of Shirkieville; however, there is no small community like Shirkieville to the southwest of the pit.

40. While IDEM thought it a good idea for the upwind monitors at Shirkieville to register the effect of activities in that town, they sited the downwind monitors on the south side of Blanford so as not to be influenced by activities in that town.

41. If you have a barrier of trees and buildings upwind of your monitor, such as Shirkieville, they will likely catch some of the dust coming toward the monitor.

42. There are numerous barrels and other containers for burning trash in the town of Blanford, some in close proximity to the Brklach Hall monitors, that may influence the TSP concentrations recorded there.

43. The Shirkieville monitors are situated approximately 4 1/2 miles to the south of the Brklach Hall monitors, so only when the wind is from the south will the same air mass flowing through the Shirkieville monitors reach the Brklach Hall monitors, in which case its journey between the two passes only over farmland and roads, not the pit, since the pit lies to the west of them both.

44. There is no conceivable direction from which the wind could blow whereby an air mass flowing through the Shirkieville monitors would then pass over the pit before flowing through the Brklach Hall monitors.

45. Peabody suggested an upwind monitoring site on their property southwest of the pit, but IDEM rejected that site because it was located in Illinois.

46. IDEM contracts with Vigo County Air Pollution Control to operate and audit the hi-vol monitors.

47. The hi-vol monitors use a glass fiber sampling filter for measuring total suspended particulates (TSP) of .01 to 100 microns in size.

48. The hi-vol samplers have a timer (either a 6–day or 7–day) that turns the machine on and off via tabs; the timer provides power to a flow controller unit which then provides power to the sampler motor which pulls air across the filter.

49. The particulates adhere to the filter fibers, but after a certain amount collects on the filter, the particulates pile up, so a heavier loaded filter may lose particulate when handled.

50. IDEM initially weighs each unexposed filter, then transmits them to Vigo County where they are eventually placed on a sampler and exposed during a sample run.

51. Each filter has its own jacket called a "daily hi-vol data record" which serves as its permanent holder and record.

*5 52. The daily hi-vol data record is preprinted on the front for the recording of certain information: site location, AIRs number, flow controller serial number, hi-vol serial number, filter number, time start, initial flow meter reading, time stop, final flow meter reading, wind, visibility, sky, humidity, temperature, pickup day, sample day, elapsed time and remarks.

53. A Vigo County employee attends to the monitors twice a week, removing the exposed filters from the previous sample runs and setting up the machines for the next run.

54. The machine may not be set to run for several days after the unexposed filter is installed and the exposed filter may not be picked up for several days after the run is complete.

55. IDEM's monitors are not air-tight or sealed off when they are not running, so air currents continue to flow through the monitor even when it's turned off, just as air flows through all openings.

56. The particles of dust suspended in the air flowing passively through the monitors are deposited on the filter, too, so an exposed filter will contain not only particulate collected during a sample run but passive deposition as well.

57. The downwind monitors at Brklach Hall sit on a flat roof where dust may settle during calm periods only to be blown up into the monitors, re-entrained, when the wind begins blowing.

58. Upon removal from the monitor, an exposed sample is folded in half and placed inside its respective data record card, then taken to the Vigo County office where it is put, sometimes with another exposed filter, in an envelope; then, several of these smaller envelopes are placed in a larger envelope and mailed to IDEM.

59. Frequently, IDEM does not receive an exposed filter from Vigo County for more than seven days after the sample run date, and then it may be another day or more (up to a week) before IDEM weighs them.

60. IDEM utilizes a Quality Assurance Manual (QAM) which sets minimum standards for assuring air quality data, as required by the U.S. Environmental Protection Agency.

61. The QAM, Chapter 7, § 6.2(3)(h) states that:
... the filter must be in the laboratory within six days of the sample run or it is invalid.

62. IDEM does not record the date they receive an exposed filter from Vigo County and before 1991, they did not record the day the exposed filter was weighed.

63. IDEM did not invalidate filters received more than 6 days after the sample ran.

64. On occasion, IDEM would find loose particulate matter that had been dislodged from the filter(s) inside the envelope.

65. The QAM, Chapter 7, § 7.1(2) states:
Examine the shipping envelope for sample material that may have become dislodged from the filter. If such material is observed, recover as much as possible by brushing it from the envelope onto the filter with a soft brush.

66. IDEM never weighed the loose particulate matter, invalidated a sample for that reason or even notated which filter(s) lost particulate (if they knew, since two filters were sometimes in the same envelope), they simply threw it away.

***6** 67. The TSP concentration calculation uses two variables: air volume and mass (weight).

68. For hi-vol monitors equipped with a flow controller, like the ones used herein, the QAM, Chapter 7, § 5.1(3) states that volume is calculated by multiplying the sampling rate (the rate at which the flow controller is set) times the elapsed time (of the sample run) in minutes.

69. The hi-vol monitors are calibrated to operate with a sampling flow rate of 1.3 cubic meters per minute, so when the monitors run for exactly 24 hours (1440 minutes), the total air volume equals 1872.

70. As indicated by the entries on some of the filter data record cards, the actual elapsed time for a particular run may have been more or less than 1440 minutes; however, IDEM always calculates concentration using 1872 for air volume.

71. The QAM, Chapter 11, § 1.3 states, in part:
In addition to the general requirements that must be met (for valid data), all TSP ... data shall be considered invalid and not be used for any purpose if any of the following conditions are met ...
***

(2) All necessary identifying data is not on the filter card. The following must be present in addition to that required for all intermittent samples:
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d) Meterological (sic) data concerning wind, visibility, sky (cloud cover), humidity, temperature range.

72. Not one single filter data record card has any meterological data filled in; however, none were invalidated for that reason.

73. To ascertain potential fugitive dust violations, IDEM first identified the days for which the TSP concentrations at either Shirkieville or Brklach Hall were fifty or more micrograms per cubic meter above background concentration.

74. Next, they obtained meteorological data for that day, including wind speed, resultant and hourly wind direction, range, persistence, precipitation and number of calm hours.

75. The basic criteria for determining a violation was a resultant wind direction (or majority of hourly readings) from 135° to 270° if the higher reading was at Brklach Hall, and from 270° to 360° if Shirkieville had the higher reading.

76. IDEM did not have any instruments for measuring meteorological conditions on site; the closest weather monitoring station to Blanford is operated by Public Service Indiana at its Wabash facility located 17 kilometers to the southeast.

77. IDEM chose instead to rely on data collected by the Terre Haute National Weather Service at its station located 29 kilometers southeast of Blanford.

78. IDEM believed that 29 kilometers was not a significant distance in terms of average meteorological conditions and that the Terre Haute data would be very representative of conditions in the Blanford area.

79. Resultant is a term defining the average wind direction occurring over a period of time; it is a fictitious wind direction that is a vector sum of the actual wind directions over a period of time; the wind almost never actually blows steadily from that direction.

*7 80. Resultant wind direction has no relevance to try and predict where the dust created by a one or two second blast went since the only wind that would affect the movement of such dust is the actual on-site wind occurring at the moment of the blast and for the subsequent period before the dust settled.

81. If a sampler runs for 24 hours and the wind blows from different directions during that 24 hours, there is no way of knowing which way the wind was blowing when a particular particulate got on the filter.

82. The Terre Haute hourly weather data demonstrates that the wind direction on any given day varies from hour to hour and, over the course of a full day, it may range over 100° or more.

83. Since March, 1990, Peabody has been recording wind direction information with instruments installed at their own upwind and downwind monitors, and these records demonstrate that significant variations in wind direction can occur at sites just a few miles apart.

84. Comparisons between the Peabody on-site wind data collected since March, 1990 and the Terre Haute wind data for the same days demonstrate occasional significant deviations in wind direction between the two locations.

85. Both the upwind and downwind monitors recorded elevated TSP concentrations irrespective of the resultant wind direction, elevated concentrations appear to be independent of wind direction.

86. The Universal Mine is situated in a rural area and IDEM maintains that there are no other significant sources of particulate emissions in the area other than Peabody mining activities; however, some farming activities create significant amounts of dust as well as traffic on unpaved roads, both of which are prevalent in and around the Universal Mine.

87. Except for the draglines, the mining activities are sporadic and take place over hundreds of acres of property.

88. At the time IDEM decided to cite Peabody for violating the fugitive dust rule, it had no knowledge of any Peabody mining activities on the 54 days in question other than that the draglines operated almost 24 hours a day and that there were 3 or 4 haul roads that came out of the pit.

89. On July 9, 1988, the first of the days charged as a violation, there were no mining activities at the Universal Mine—the mine was shut down.

90. Between July, 1988 and August, 1990 no IDEM inspectors have observed visible fugitive dust leaving the Universal Mine property; most observations indicate that the dust created by the draglines stay within the pit area.

91. IDEM made no attempt to isolate Peabody's farming operations from their mining activities; nor did they make any findings that the farming activities fell outside of the statutory exceptions.

92. IDEM analyzed only six filters microscopically for the sole purpose of determining the amount of combusted particulates on those filters; they never attempted to determine the proportionate contribution of any other potential sources, such as farms.

CONCLUSIONS OF LAW

*8 1. This tribunal has jurisdiction over the parties and subject matter of this proceeding.

2. Pursuant to I.C. 13–7–11–2(j), IDEM has the burden of proving by a preponderance of the evidence that Peabody violated the fugitive dust rule at its Universal Mine on each of the 54 days alleged.

3. 326 IAC 6–4–5 requires IDEM to use the hi-vol samplers to measure ambient air concentrations.

4. The IAC and the QAM are both silent as to site locations for upwind and downwind monitors.

5. To determine the exact contribution of a source to ambient air concentrations, the source should be lined up between the upwind and downwind monitors in the direction of the wind blowing at the time of sampling, with the monitor at or near the source's property boundary.

6. The requirement of 326 IAC 6–4–2(3) that a violation occurs when the ambient air concentration exceeds background concentrations by 50 micrograms per cubic meter implies a certain degree of exactness that must necessarily apply to all steps of the measurement process.

7. The purpose of monitoring upwind and downwind assumes that "but for the mine" the air quality would be the same at both locations since it is the same air being measured.

8. IDEM's premise that the air quality at Shirkieville is comparable to the air quality southwest of the mine is faulty for several reasons: 1) they have never tested their premise with measurements; 2) there is no town southwest of the mine and; 3) the activities taking place in both areas at the same time cannot possibly be identical.

9. Regardless of IDEM's above premise, the upwind monitors should have been sited southwest of the mine to get a true background concentration when the wind blew from the southwest.

10. Wind measurements collected at Terre Haute are not sufficiently reliable indicators of wind movements at the mine during any given 60 minute period.

11. A 24–hour sample cannot prove a 60 minute violation without knowing the exact hour and wind direction when each particle impacted the filter.

12. IDEM should have monitored the Peabody Mine the same as it has in all other cases of suspected fugitive dust; only then could they have achieved the requisite specificity to enforce 326 IAC 6-4-2(3).

13. IDEM failed to consider which portion of the TSP measured downwind came from Peabody's farming activities which are exempt absent evidence that they fall outside of the exception listed in 326 IAC 6-4-6.

14. IDEM failed to determine to what extent other sources in the area contributed to the TSP concentration downwind as required by 326 IAC 6-4-3.

15. According to IDEM's own QAM, all of their samples are invalid because none of the filter record cards contain any meteorological information.

16. By IDEM's own testimony, some of the exposed filter weights are incorrect, and the sample invalid, because loose particulate dislodged from the filter was not weighed with the filter.

17. According to the QAM, some of the samples are invalid because they were not returned to IDEM's lab within six days of the sampling run.

*9 18. IDEM's failure to record which samples had loose particulate and which samples were not received within the six day period renders all of the samples unreliable.

19. IDEM has not proven by a preponderance of the evidence that Peabody violated the fugitive dust rule on any of the 54 days in question.

ORDER

The Commissioner's Notice and Order issued on November 13, 1989, and subsequent Notice and Order issued October 16, 1990, are null and void and hereby vacated.

August 1, 1991

Anita W. Kimmell
Administrative Law Judge

1992 WL 562556 (Ind.Dept.Env.Mgmt.)

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